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ADDRESSED TO: ASSISTANT COMMISSIONER OF PATENTS, WASHINGTON, DC

20231, ON August 3, 2000

AGENT/ATTORNEY FOR APPLICANTS

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: DeBouck, *et al.*

August 3, 2000

Serial No.: 09/297,701

Group Art Unit No.: 1655

Filed: May 5, 1999

Examiner: Souaya, J.

For: METHODS FOR IDENTIFYING GENES ESSENTIAL TO THE GROWTH OF AN
ORGANISM

Assistant Commissioner of Patents
Washington, D.C. 20231

AMENDMENT & RESPONSE UNDER 37 C.F.R. §1.111

In response to the Office Action mailed May 3, 2000 (Paper No. 4) (herein "Office Action"), the Applicants respectfully request entry into the record and consideration of this amendment and response. As this amendment and response is timely filed within the shortened statutory period for response of 3 months, no fee is required. Please charge any additional requisite fees relating to this amendment and response to Deposit Account No. 19-2570.

Please amend the above-identified application as follows:

REMARKS

Claims 1-22 are pending in the instant application. These claims are subject to restriction requirement into Groups I to III. Claims 14-17 and 19-22 have been canceled without prejudice or disclaimer of the subject matter therein. Claims 1-13 and 18 stand rejected. The Applicants traverse all of the grounds of rejection raised by the Examiner in the Office Action. No claims

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have been objected to. In view of the foregoing amendments and the following response, the Applicants believe the claims presented herein are allowable. Reconsideration is respectfully requested.

RESTRICTION REQUIREMENT

The Applicants hereby affirm the provisional election of Group I without traverse made by the undersigned in a telephone conversation with the Examiner on January 5, 2000.

CLAIM REJECTIONS UNDER 35 U.S.C. §112, FIRST PARAGRAPH

Claims 13 and 18 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

✓ Claims 13 and 18 have been cancelled without prejudice herein, thus rendering moot the written description rejection against these claims.

CLAIM REJECTIONS UNDER 35 U.S.C. §103(a)

Claims 1-12 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bascomb *et al.* (EPO 0 680 722 A1) (herein "Bascomb") in view of Lennon *et al.* (Trends in Genetics, October 1991, vol. 7, pp 314-317) (herein "Lennon") and Nishi *et al.* (JBC, March 1994, vol. 269, pp6320-6324) (herein "Nishi") in view of Lennon. Applicants respectfully traverse these rejections.

It is submitted that neither the combination of the Bascomb in view of Lennon nor Nishi in view of Lennon teaches or suggests the present invention.

Bascomb teaches a screening method for identification of compounds that specifically inhibit a "predetermined" enzyme or metabolic target site that in most cases is specific to plants. Bascomb's method further relies on the genetic complementation of a microbial defect with a gene of plant origin (page 3, lines 48-55).

Nishi teaches a method of detecting an essential target of an agent herein "LMB" that induces arrest of the eukaryotic cycle by cloning an *S. pombe* LMB resistant gene into an *S. pombe* LMB sensitive strain JY266 (see abstract, and page 6321, col. 2, first para).

Lennon teaches a method of screening libraries involving generating a plurality of filters that form a grid, each grid containing a predefined region (page 314, col. 2, first para, page 315, col. 1 last para, and col.2).

Nowhere does Bascomb in view of Lennon or Nishi in view of Lennon, either singly or in combination (respectively), teach or suggest the method of Applicants' invention, as claimed, for identifying gene(s) essential to growth. In the instant application, the Applicants' invention is used to identify "any" essential gene in the genome of the given organism comprising:

(a). a mutagenized organism by transfection with either a randomly integrating transposon or similar insertional or transposable element of known sequence, such as Tn, IS, Ty element or phage Mu, or with constructed suicide vector.

(b). the preparation of labeled DNA probes, from isolated genomic DNA, from the test cultures is used as a templates in primer extension reactions using oligonucleotide primers directed against said insertional or said transposable elements.

(c). the hybridization of said DNA probes with genomic grids to identify mutated genes containing the said insertional or said transposable elements.

Using the teachings of Bascomb in view of Lennon, either singly or in combination, would not motivate one skilled in the art to make the methods of the Applicants' invention in

Claims 1-12 for the following reason. Bascomb's method of identifying herbicides are limited to plant genes that have microbial homologs. The Applicants claim a method of identifying any gene essential to growth.

Nishi teaches away from the claimed invention as stated in (a), (b), and (c) above. The skilled artisan would not use Nishi's method to arrive at the Applicants' claimed gridding method. If genomic DNA is extracted from the wild-type LMB sensitive strain (JY266), and mutant LMB resistant strain (LM102) and the genomic DNA is used as template for two separate hybridization probes, there would be no way of identifying the difference between the two hybridization patterns. The genomic grids would not be usable to distinguish between the dominant (LMB resistant) form of the *crm1* gene and the recessive (LMB sensitive) form of the *crm1* gene. The "genomic DNA" labeled and hybridized to the "genomic grids" would result in both *S. pombe* strains expressing identical hybridization patterns due to slight mutations in the essential gene sequences that will not be detected by DNA-DNA hybridizations. In the instant invention, many of the insertional or transposable elements are known by one skilled in the art to insert a single copy or up to a few copies per cell. Therefore, the hybridization patterns of these essential genes may readily be identified because only the genes with integrating transposon or similar insertional or transposable elements will be hybridized to the grids, not the whole genome.

In view of the forgoing remarks, the Applicants respectfully submit that they have overcome all grounds of the Examiner's rejections based on 35 USC §103(a), first paragraph, and respectfully request that this rejection be withdrawn.

The Applicants reserve the right to prosecute, in one or more patent applications, the claims to non-elected inventions, the claims as originally filed, and any other claims supported by the specification. The Applicants thank the Examiner for the Office Action and believe this

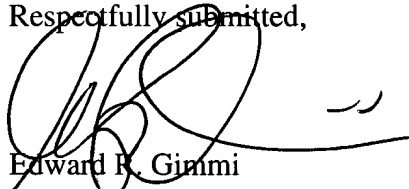
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response to be a full and complete response to such Office Action. Accordingly, favorable reconsideration and allowance of the pending claims is earnestly solicited.

If it would expedite the prosecution of this application, the Examiner is invited to confer with the Applicants' undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Edward R. Gimmi', is written over the typed name.

Edward R. Gimmi
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